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ABSTRACT

One of 10 publications from a long-range vocational education planning project, this report presents a simplified eight-step method for long-range planning in vocational education. The planning model is presented in two major components: A procedures summary containing the eight steps used in the program planning process, and one or more alternative methods for making the projections called for in the summary. Methods for making the projections are presented in two parts. Part I is comprised of steps 1-4 which assess total enrollment projections, student interest, labor market demand, and program enrollment projections. Steps 5-8 comprise part II and take the sets of program projections developed in part I and use them to estimate instructional staff needs, instructional staff costs, capital outlay, and consumable costs associated with each program. A planning year form for combining the results of all the steps on one sheet is included and a flow diagram of the procedures for planning is shown. (This report is designed for use in conjunction with another publication developed by the same team of authors entitled "Planning for Vocational Education.") (BL)

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A POLICY INFORMATION SYSTEM FOR VOCATIONAL EDUCATION

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A POLICY INFORMATION SYSTEM
FOR
VOCATIONAL EDUCATION

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POLICY INFORMATION SYSTEM FOR VOCATIONAL EDUCATION

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ACKNOWLEDGMENT

The preparation of this report was a team effort of the staff of the Long-Range Vocational Education Planning Project of the Middle Cities Education Association. Ideas and information were gleaned from numerous sources by everyone involved and then synthesized at regular staff meetings before finally being assimilated by those principally responsible for the completion of particular chapters or sections. The various authors and their more specific responsibilities in the preparation of the publication are described below.

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Paul J. Kriz, Ph.D. was a researcher with the project, and has academic and professional training in industrial education and educational administration. Occupational experience includes teaching industrial and commercial subjects at the secondary level, and administrative and technical direction of vocational-technical state projects in Wisconsin. Dr. Kriz's primary contribution to this report was in the drafting of Tabs VI, VII, and VIII.

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Clifford Jump, Ph.D., is currently the Director of Agricultural Vocational Technical Education Division at Michigan State University. During most of the duration of the Long-Range Vocational Education Planning Project, he was the Coordinator of a Career Education Planning District and Director of the Calhoun Area Skill Center in Battle Creek, Michigan. Previous background includes several years as school system principal and superintendent. As a field intern, Dr. Jump was responsible for testing this product in one school system.

John R. Martin, Ph.D., was a project field intern with professional and academic training in technical education, social science, guidance counseling and educational administration. Career experiences include Director of Student Placement of the Flint Community Schools, vocational service coordinator, and client guidance services at the secondary level. Project contributions were in the area of vocational placement and community follow-up activities. Dr. Martin was responsible for testing this product in one school system.

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Richard Featherstone, Ph.D., is a professor of Michigan State University with a long-standing interest and expertise in the planning of education systems. He has been a research fellow at the NCHEMS and is the former chairman of the Department of Administration and Higher Education in the College of Education at Michigan State University. He spent many years as the chief administrative officer of urban school systems before becoming a professor. Dr. Featherstone acted as a faculty consultant to the project throughout its eighteenmonth duration and served to educate all involved to the theory and practice of education planning while making specific contributions to several of the project products.

Other members of the project team who played important roles in the formulation of all aspects of the project include the following. David Unnewehr, a graduate research assistant with academic and professional experience in planning and journalism contributed to the editing of nearly all project products. Stephany Tornatzky, a graduate research assistant with academic emphasis in education and organizational communications, concentrated on the community input to vocational planning. Judy K. Pfaff, research assistant with educational background in systems science, mathematics and educational psychology, was a computer programming specialist for the project. Thomas E. Johnston, a research assistant with academic background in labor relations, economics and social science and supervisory experience in industry, focused on the concern of the unemployed and underemployed. Jeffrey Crause, a graduate student in the School of Urban Planning studied labor market boundaries. Albert Lynd, Ph.D., played an important research role with respect to planning for vocational personnel. Donald Hanna, an instructor with the College of Engineering, worked on the projection of enrollments and student program interests and Scott Ramsey, a graduate student with background in urban geography was a computer programmer with the project.

An important component of the success of all aspects of the project was the competent management of clerical work, bookkeeping, and office administration by Mary Guile.

INTRODUCTION

The purpose of the Policy Information System is to provide the school vocational administrators with a simple tool to assist them in looking into and preparing for the future. They need this tool so that they can take steps now that will make their vocational education programs more effective several years from now. Formulating an image of the future is important since so many of the needs of a good vocational program require long-range advanced planning.

Utilization of the tool described herein can help the school administrator organize information and ideas and focus them on the future. It does this in the following ways:

1) It points the school policy maker to key variables or factors affecting the future of the district's vocational education programs;
2) It provides a list of the best sources of base information for each of the key variables; and
3) It offers methods for understanding and determining the interrelationships between the key variables as they interact over time.

The principal component of the tool presented in this report is a simplified, step-by-step method for long-range planning for vocational education. Part one starts with steps for assessing the future need for and interest in vocational programs.

Part Two takes the projected programs of Part One and translates these into resource requirements and costs.

It is important to realize that computer facilities are not necessary for the use of this model. Although computer processing allows for greatly increased sophistication and a greater data base for making projections. For districts that wish to utilize this model using their own computer facilities, the instructions and programs are offered in a separate report entitled Policy Information System Computer Program.

The planning model is designed at several layers of complexity in order to be useful to a wide range of user types. The authors feel that the real value of this model does not lie simply in its use, but through understanding the planning process that it utilizes. For this reason, the model is constructed in such a way that the planner can use the model in segments, "pull it apart" for analysis, and put it back together discarding those parts not appropriate to the local situation. This process develops an understanding such that over time, the planning process will become an integral part of school administration. They key word is flexibility.

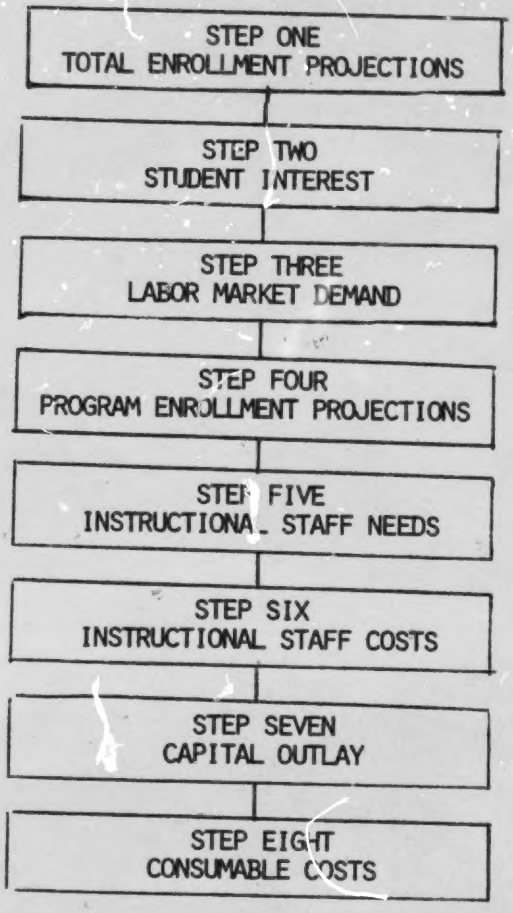
This report should be used in conjunction with another publication developed by the same team of authors entitled Planning for Vocational Education. This monograph looks at the field more broadly and should give the innovative planner ideas for expanding the model presented here.

The planning model used for the Policy Information System consists of two major components. The first section is the Procedures Summary. This contains the eight steps which are used in the program planning process. In many cases, districts or Local Education Agencies have developed their own projections or estimates of program information. In this case, the information may be entered directly into the procedures summary.

The second section consists of eight TABS, each corresponding to one step in the Procedures Summary; both the TABS and corresponding steps are color-coded. The TAB provides one or more alternative methods for making the projections called for in the Procedures Summary. The projections are completed in the TAB, then transferred to the corresponding step in the Procedures Summary. A form is also provided so that the results of all the steps can be combined on one sheet.

The methods contained in each TAB are designed to meet differing requirements and levels of sophistication. Method One of each TAB, termed professional judgement, requires only that the planner make an informal estimate of the factor under consideration. It is therefore recommended to get the planning process started immediately. Although accurate and reliable information is an important part of the planning process, this method is needed to provide continuity in planning while better information is being developed. Other alternative techniques in each TAB provide the means for developing better projections.

FLOW DIAGRAM OF THE PROCEDURES FOR PLANNING


STEP ONE
TOTAL ENROLLMENT PROJECTIONS
STEP TWO
STUDENT INTEREST
STEP THREE
LABOR MARKET DEMAND
STEP FOUR
PROGRAM ENROLLMENT PROJECTIONS
STEP FIVE
INSTRUCTIONAL STAFF NEEDS
STEP SIX
INSTRUCTIONAL STAFF COSTS
STEP SEVEN
CAPITAL OUTLAY
STEP EIGHT
CONSUMABLE COSTS

The planner is encouraged to examine the entire process before attempting to work through the model, noting especially the definitions and data requirements. By becoming aware of the total data requirements, costly delays in obtaining data may be avoided and the whole process will be accomplished in a more orderly manner. Coordinating information flows will also make it easier to integrate the planning process into administrative practice and make planning a routine activity of school administration.

POLICY INFORMATION SYSTEM

PROCEDURES SUMMARY

POLICY INFORMATION SYSTEM

PROCEDURES SUMMARY

The Procedures Summary contains separate steps which have been isolated as essential components of the planning process. If this information has already been developed, it may be entered directly into the steps. Where projections have not been made, complete instructions for projecting each step can be found in the corresponding Tab. At the end of the last step, a summary data sheet is provided so that the complete data set for each planning year may be entered on one sheet. This summary is useful in comparing the total set of programs to the total student needs and interests and available resources. A two-part procedure is suggested. First, a set of alternative target programs should be established. This is steps one through four in the summary. This should provide various alternatives to meeting student and community needs. Second, each set of alternatives may be "costed out" to determine the approximate cost of each alternative. This is carried out in steps five though eight. The alternative which best meets the community's combination of needs and available resources can best be selected.

STEP ONE

Place your projections for Total District Enrollment in the space provided below.

	1977	1978	1979	1980	1981	1982
K						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

Complete instructions for the alternative methods of projecting
Total District Enrollment
and a list of possible information sources can be found in
TAB ONE

STEP TWO

Place your projections for Student Interest in the space provided below:

Program	1977	1978	1979	1980	1981	1982

Complete instructions for the alternative methods of projecting

Student Interest

and a list of possible sources of information can be found in

Tab Two

STEP THREE

Place your projections for Labor Market Demand in the space provided below:

Program	1977	1978	1979	1980	1981	1982

Complete instructions for the alternative methods of projecting
Labor Market Demand
and a list of possible sources of information can be found in
Tab Three

STEP FOUR

Place your projections for Program Enrollment in the space provided below:

Program	1977	1978	1979	1980	1981	1982

Complete instructions for the alternative methods of projecting

Program Enrollment

and a list of possible sources of information can be found in

Tab Four

STEP FIVE

Place your projections for Instructional Staff Needs in the space provided below:

Program	1977	1978	1979	1980	1981	1982

Complete instructions for the alternative methods of projecting

Instructional Staff Needs

and a list of possible sources of information can be found in

TAB FIVE

STEP SIX

Place your projections for Instructional Staff Cost in the space provided below:

Program	1977	1978	1979	1980	1981	1982

Complete instructions for the alternative methods of projecting

Instructional Staff Cost

and a list of possible sources of information can be found in

TAB SIX

STEP SEVEN

Place your projections for Capital Outlay in the space provided below:

Program	1977	1978	1979	1980	1981	1982

Complete instructions for the alternative methods of projecting
Capital Outlay

and a list of possible sources of information can be found in
TAB SEVEN

STEP EIGHT

Place your projections for Program Consumables Cost in the space provided below:

Program	1977	1978	1979	1980	1981	1982

Complete instructions for the alternative methods of projecting

Program Consumables Cost

and a list of possible sources of information can be found in

TAB EIGHT

PLANNING YEAR

	Students				Dollars				
Program	Tab One	Tab Two	Tab Three	Tab Four	Tab Five	Tab Six	Tab Seven	Tab Eight	Tab Nine

PROGRAM PLANNING AND THE BUDGETING PROCESS

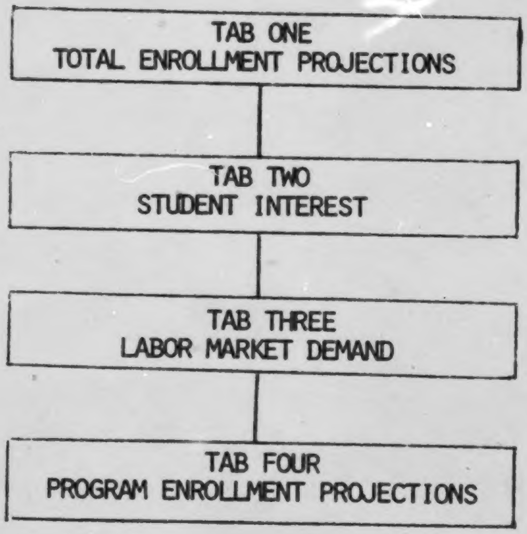
The end result of the Procedures Summary is a very rough form of program budget, excluding administration and overhead expenses. This is intended to provide some idea of where expenses are headed given the type of programs set forth in Step Four. The purpose for this is that if programs are actually based on real needs and interests, the resulting programs will be supportable in terms of budget requests. Even (as would be the case with a rapid increase in programs) if funds are not immediately available, administrators, school boards and the public can be made aware of what funds are necessary to fund adequate vocational programs. This should make possible the maximum public support should increased revenues be necessary.

Although it is possible to compare expenditures to projected revenues, the purpose of planning is not to reduce program expenditures to the level of anticipated revenues. While this may be necessary over the short run, it is not the goal of long range planning. The objective here is to provide the rationale and background information for establishing the level of future budgets. Too often, necessary programs are defeated or shelved because of inadequate information about the needs and alternatives. If programs are well designed, information on their costs and results should be of benefit to administrator and public alike.

As in many activities, a single proposal may not be acceptable; alternatives for specific programs or parts of programs may be needed. This process is designed [illegible] "run through" with alternative program levels, with each indicating what needs are answered and what remains unmet. Through discussion of these alternatives better programs can be established and the dialog surrounding the purpose and scope of vocational education may be improved.

PART ONE

Part One of the Policy Information System creates a set of enrollment projections for individual vocational programs using the factors of total enrollment, student interest and labor market demand. Each of these factors is arrived at by a separate projection, and the value or weighting of each is left to the determination of the local administrator; there is no one "best" formula.


TAB ONE
TOTAL ENROLLMENT PROJECTIONS
TAB TWO
STUDENT INTEREST
TAB THREE
LABOR MARKET DEMAND
TAB FOUR
PROGRAM ENROLLMENT PROJECTIONS

TAB ONE: TOTAL ENROLLMENT PROJECTIONS

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I. INTRODUCTION

II. ALTERNATIVE METHODS FOR COMPLETING STEP ONE OF THE PROCEDURES SUMMARY

  A. Method One: Professional Judgement

  B. Method Two: Cohort Survival Projection

III. ADJUSTMENT OF METHOD TWO PROJECTIONS

IV. USEFUL SOURCES OF INFORMATION

I. INTRODUCTION

Projections of enrollment are required in order to determine future staff, facilities, and financial requirements of school districts. Of particular interest to vocational education is the number of students expected in the 11th and 12th grade in any given year. It is this population from which most vocational education students will come. Therefore, an increase or decrease in the number of 11th and 12th grade students could potentially affect the number of students enrolling in vocational education programs. This TAB is designed to assist you in projecting not only the future number of 11th and 12th grade students in your district, but also the number of students expected to be enrolled in all grades.

ALTERNATIVE METHODS FOR COMPLETING TAB ONE

In some school districts, enrollment projections by grade are currently available. If your district has such projections, you may wish to substitute that data in the summary data sheet for TAB ONE.

If projections are not currently available, this TAB presents several methods which may be used to estimate future enrollments. These range from professional judgement (the use of your own informal estimates) to computer processing of past enrollments and other data. For computer processing instructions, please refer to the Appendix.

Method One is an enrollment projection based on your own professional judgement. This method requires the least amount of time and data, and is therefore recommended if your wish to get the planning process started immediately. Later you may have time to complete more sophisticated projection techniques as outlined in Method Two.

Method Two is a manual adaptation of the cohort survival method. This technique is commonly used by demographers and others interested in population projections. It relies on using the past ratio of "survivors," that is, those who move on from one grouping to the next.

A. METHOD ONE: PROFESSIONAL JUDGEMENT

REQUIRED DATA - NONE

RECOMMENDED DATA - DISTRICT ENROLLMENT BY GRADE FOR THE PAST SIX YEARS.

Method One provides a mechanism for projecting enrollments based on your professional judgement. While no data is required, it is recommended that you have enrollment figures for the past six years in order to provide a basis for your future enrollment estimate. You may assume that enrollment for any given grade will be close to its enrollment for the previous year, unless some structural change (e.g. a shift from parochial to public schools) is occuring. While there are no set steps to this method, a data entry sheet is provided for indicating past enrollments and projections in one set. A simple technique might be to chart the past six years enrollments to detect any enrollment trends, then extrapolate those trends.

If you wish to utilize enrollment projections based only on this method, transfer these projections to Step One of the Procedures Summary.

	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
K											
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

B. METHOD TWO: COHORT SURVIVAL PROJECTION

Method Two projects enrollment by a method called the cohort survival technique. This relies on the number of students moving up to the next grade each year. The method can be quite accurate and is widely used in all types of planning activities where population projections are called for. It involves calculating the rate at which the number of students changes as that "cohort" or age-group moves through the grades. Since the number of entrants to each grade is known (at least for a five-year period), the accuracy of the projection is limited only by the accuracy of the survival ratio.

DEFINITIONS

1. *Enrollment* - the total number of students enrolled in each grade for that academic year.
2. *Survival rate* - the percent of students moving from one grade to the next each year. For example, if the 10th grade contains 1000 students in 1975 and there are 950 students enrolled in 11th grade in 1976, then the *survival rate* for the 1976 11th grade is 95 percent.
3. *Average survival ratio* - the average of survival rates for each grade across a number of years. This is the figure that is used to estimate future survival from one grade to the next.

Example: your data indicate that the *survival rates* for the 11th grade are:

1970	1971	1972	1973	1974	1975
.95	.96	.95	.93	.97	.94

the *average survival ratio* is 95 percent or .95

DATA REQUIRED

1. Enrollment by grade (K-12) for the past six years.

PROCESSING STEPS

1. **PLACE THE ENROLLMENT FIGURES IN THE APPROPRIATE BOXES ON THE DATA ENTRY SHEET.** *The years of enrollment should be indicated at the top of each column.*

2. **CALCULATE THE SURVIVAL RATE FOR EACH GRADE IN EACH YEAR.** *Note that for the first year of your data, there are no survival rates. Place the survival rate in the lower section of the box for that grade.*

Example:

grade	1974	1975
7th	1000	1050
*	-	.97
8th	930	950
*	-	.95

Note that each survival rate is listed in the table under the numerator; thus the .95 is the survival rate for the 1975 8th grade class. The .97 is derived from the 1974 6th grade class which is not listed in the example.

3. **AVERAGE THE SURVIVAL RATES FOR EACH CLASS (ACROSS THE ROWS).** *Place that figure in the survival rate box for each future year. This becomes the survival rate for that year.*

4. **MULTIPLY THE SURVIVAL RATE FOR EACH FUTURE YEAR BY THE ENROLLMENT FOR THE NEXT LOWER CLASS FOR THE PRECEDING YEAR.** *In the example above, the enrollment for the 1975 8th grade class would be obtained by multiplying that year's survival rate (.95) by the preceding year's 7th grade enrollment (1000), the result is 950 students. Work this through one year at a time. This completes the projection.*

Grades	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
K							XXXX	XXXX	XXXX	XXXX
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

III. ADJUSTING METHOD TWO PROJECTIONS

In most instances the cohort survival (method two) projections will be the most accurate and you will probably not need to use any other method. However, the method does depend primarily on recent past trends; unusual changes in the school district such as an upcoming private school closure or district boundary change would significantly affect the accuracy of the projections. In the event that you are aware of any such changes, you may wish to adjust the projections accordingly. The simplest way of accomplishing this is to increase or decrease the projected enrollments by an estimated amount, then continue the calculations with the existing survival rates.

IV. USEFUL SOURCES OF INFORMATION

1. For a more detailed explanation of the use of the cohort survival method, see Principles and Practice of Urban Planning, Chapter 3, 1967, ICMA, Washington, D.C.
2. Jaffe, A.J. Handbook of Statistical Procedures for Long-Range Projections of Public School Enrollment. Washington, D.C. U.S. Government Printing Office, 1969.
3. Michigan Department of Education. Population and You, A Primer for Superintendents. Lansing, Michigan, 1974.
4. For recent trends in local population see U.S. Census Current Population Reports, series P-25 and 26.

TAB TWO: STUDENT INTEREST PROJECTIONS

CONTENTS

I. INTRODUCTION

II. ALTERNATIVE METHODS FOR COMPLETING STEP ONE OF THE PROCEDURES SUMMARY

A. Method One: Professional Judgement

B. Method Two: Student Interest Surveys

C. Method Three: Pre-enrollments Program

D. Method Four: Historical Program Enrollment Average

III. HOW TO COMBINE RESULTS OF METHODS

IV. HOW TO MODIFY AND EXPAND TAB TWO TO MEET LOCAL NEEDS

V. USEFUL SOURCES OF INFORMATION

I. INTRODUCTION

Student interest is a factor which obviously must be considered when attempting to predict program enrollments. Indicators of areas of future interest to students are few and their reliability is often questionable. Nevertheless, this task provides several alternative means for projecting student interest. The information required to project student interest ranges from knowledge of local trends and professional experience to a rather detailed system of interest testing. It is recommended that you proceed through the process initially with information immediately available to you. Where information is required but not available, give your best assessment. Later you may have time to locate the necessary data or develop means of identifying and developing it.

II. ALTERNATIVE METHODS FOR COMPLETING STEP TWO OF THE PROCEDURES SUMMARY

There are two factors, which may be considered separately or together, that influence the projection of student interest: (1) a projection of students interested in each program, and (2) a projection of enrollment based on past participation by program. Each of the following four methods for projecting student interest rely on one or both of these factors.

Method One relies upon your professional judgement of future student interest by program. The value of this method is in starting the planning process with minimum of data requirements. This method should be used when data required in Methods Two, Three and Four are not available, or when not time for data development and/or collection exists.

Method Two is based on surveys of student interest in vocational programs which may be given in your school district. If vocational interest surveys are already being given in your district, this method will be of immediate assistance in completing Method Two.

Method Three relies on a pre-enrollment program for students who wish to enroll in vocational education programs the following year. This method is particularly useful for short-term projections (one year) of enrollment by vocational education program and for assessing potential student interest in new programs.

Method Four uses historical patterns of enrollment by program in combination with the projection of total numbers of students in 11th and 12th grade developed in TAB ONE. This method requires information on enrollments by vocational program and is a useful method of projecting long-term student interest based upon past trends. It is not particularly useful in predicting emerging occupations or enrollment in programs in which student interest fluctuates widely.

A. METHOD ONE: PROFESSIONAL JUDGEMENT

Method One relies upon your professional judgement in projecting student interest. While you may question the accuracy of your projection using this method, many important decisions are made unconsciously using professional judgement every day. Although the ideal situation is to have all relevant information, this method is an excellent way of getting the planning process started. Later, you may wish to use other methods for projecting student interest by program, as outlined in Methods Two, Three, and Four.

Enter your projections of future student interest on the data sheet on the following pages. If no adjustments to these figures are made, they should then be transferred to Step Two of the Procedures Summary.

TAB TWO

PROFESSIONAL JUDGMENT DATA SHEET

Program	1977	1978	1979	1980	1981	1982

If no further changes or adjustments are to be made, these projections may be moved to Step Two of the Procedures Summary.

C. METHOD TWO: STUDENT INTEREST SURVEYS

Method Two uses the results of student interest surveys and tests together with the actual enrollments in programs to project future enrollment in vocational programs. The comparison between interest and actual enrollment is used to factor current student interest in programs. Where interest is being measured for a new or planned program, the average for existing programs may be used.

DEFINITIONS

1. *Average Past Interest Test* - the average number of students who expressed interest in a particular occupation. If this is done for three years, the average of the three years would be the test class
2. *Actual Average Test Class Enrollment* - the actual enrollment in each vocational program (corresponding to the occupation in which the student expressed interest) of the test class. Thus if a class of eigth graders were tested in 1972, this enrollment would be the enrollment of that same class in eleventh grade vocational programs in 1975.
3. *Attrition Rate* - the percentage decrease between the expressed interest and the actual interest indicated by program enrollment. This should be used only where enrollment has been restricted by student interest. Where other restrictions (such as space available) have been applied, used an attrition rate of 1.00 (no attrition)

DATA REQUIRED

1. **CURRENT STUDENT INTEREST SURVEYS OR TESTS.**

2. **PAST STUDENT INTEREST SURVEYS OR TESTS.** *This should be for a three-year period where possible. Test occupation names should be matched to program names.*

3. **ACTUAL ENROLLMENT FIGURES BY PROGRAM.** *This must be for the same students that were tested for the data for item two above.*

NOTE:

Where three-year periods are called for and the data are not available, shorter periods may be used, bearing in mind that any single year may have fluctuations which are not representative of general trends in enrollment. This will decrease the reliability of your projections. If shorter periods are used, the length of the period (e.g. two years) should be consistent throughout.

PROCESSING STEPS

1. PLACE THE PROGRAM NAMES IN COLUMN ONE.

2. AVERAGE THE STUDENT INTEREST EXPRESSED IN PAST INTEREST SURVEYS. *This should be over a three-year period, where possible.* PLACE THE RESULT IN COLUMN TWO.

3. AVERAGE THE ACTUAL TEST CLASS ENROLLMENT FOR THE SAME TEST CLASSES. PLACE THE RESULT IN COLUMN THREE. *The test class enrollments are for the same three-year period as the interest surveys used in step two.*

4. DIVIDE COLUMN THREE BY COLUMN TWO. PLACE THE RESULT IN COLUMN FOUR. *This is the Attrition rate. If no attrition rate is to be used, place a value of 1.00 in this column.*

5. PLACE THE CURRENT INTEREST TEST FIGURES IN COLUMN FIVE.

6. MULTIPLY COLUMN FOUR BY COLUMN FIVE. *This is the projected student interest. Where no attrition rate is used, this will be the same as column five.*

PLANNING YEAR

Col. 1 Program	Col. 2 Average Past Interest Test	Col. 3 Average Test Class Enrollment	Col. 4 Attrition Rate	Col. 5 Current Interest Test	Col. 6 Projected Student Interest

C. METHOD THREE: PROGRAM PRE-ENROLLMENTS

Method Three is a short-range technique that relies on data from a pre-enrollment program administered in October or November preceding the planning year. Depending on the actual administration of the process, this represents a somewhat firmer commitment to a particular program and therefore a more accurate projection. It is not recommended that this be used for more than one-year projections. As an additional piece of information, this method also requires (as an option) the last year's pre-enrollment and current year's actual enrollment. This is done to provide a quick check on the method's accuracy at the same time projections are being prepared for the next year. If desired, the calculated attrition rate may be applied to the current pre-enrollment data. However, the attrition rate should only be used where enrollment changes are due primarily to student interest, not problems in supplying the program.

METHOD THREE PROCESSING STEPS.

1. ENTER PROGRAM NAMES IN COLUMN ONE.
2. ENTER PREVIOUS YEAR'S PRE-ENROLLMENT DATA IN COLUMN TWO.
3. ENTER CURRENT PROGRAM ENROLLMENT IN COLUMN THREE.
4. DIVIDE COLUMN TWO BY COLUMN THREE. PLACE THE RESULT IN COLUMN FOUR. *This is the percent actually enrolled.*
5. ENTER CURRENT PRE-ENROLLMENT DATA IN COLUMN FIVE. IF THE ATTRITION RATE FROM COLUMN FOUR IS NOT DESIRED, COLUMN FIVE IS THE PROGRAM PROJECTION.
6. OPTIONAL: MULTIPLY COLUMN FOUR BY COLUMN FIVE. PLACE THE RESULT IN COLUMN SIX. *This is the projected program enrollment.*

PLANNING YEAR

Col. 1 Program Name	Col. 2 Past Year's Pre-Enrollment	Col. 3 Current Program Enrollment	Col. 4 Enrollment Percentage	Col. 5 Projected Program Enrollment

METHOD FOUR: HISTORICAL PROGRAM ENROLLMENT PATTERNS

Method Four relies on historical patterns of enrollment by program in combination with a projection of total numbers of students from TAB ONE.

Data Required:

1. Past three years enrollment for each program.
2. Total 11th and 12th grade enrollment for the past three years and for each planning year (from TAB ONE)

METHOD FOUR: PROCESSING STEPS

1. PLACE PROGRAM NAMES IN COLUMN ONE. *(next sheet, data page)*
2. AVERAGE THE THREE PAST YEARS ENROLLMENT FOR EACH PROGRAM. PLACE THIS FIGURE IN COLUMN TWO.
3. AVERAGE THE PAST THREE YEARS 11TH AND 12TH GRADE ENROLLMENT. PLACE THIS FIGURE IN COLUMN THREE. THIS SHOULD BE THE SAME FIGURE FOR ALL PROGRAMS.
4. DIVIDE COLUMN TWO BY COLUMN THREE. PLACE THIS FIGURE IN COLUMN FOUR. *This is the program percent of total enrollment.*
5. PLACE THE PROJECTED TOTAL ENROLLMENT FOR THE PLANNING YEAR IN COLUMN FIVE. THIS SHOULD BE THE SAME FOR ALL PROGRAMS.
6. MULTIPLY COLUMN FOUR BY COLUMN FIVE. PLACE THE RESULT IN COLUMN SIX. *This is the projected program enrollment.*

This completes method four. If no adjustments or combinations of methods are to be used, transfer these results to Step Two of the Procedures Summary.

PLANNING YEAR

Col. 1 Program	Col. 2 Average Past Program Enrollment	Col. 3 Average Past Total Enrollment	Col. 4 Enrollment Percentage	Col. 5 Projected Total Enrollment	Col. 6 Projected Program Enrollment

III. HOW TO COMBINE RESULTS OF SEVERAL METHODS

If you wish, you may use more than one method to project student interest by the use of a weighted mean which combines the projections of two or more methods. The resulting projection is essentially an average projection of the methods used, with this exception. The weighted mean allows you to assign more importance to one method than another. In all cases, the weights assigned to each method must sum to 1. For example, if you wish to use Method One and Method Three and combine the results, but believe that Method Three is much more useful than Method One, you may assign a weight to each method which reflects that difference in importance. In this case you might assign a weight of .75 to Method Three, the most important method, and a weight of .25 to Method One.

PROCESSING STEPS FOR COMBINING METHODS

1. ENTER PROGRAM NAMES IN COLUMN ONE (DATA SHEET NEXT PAGE).
2. PLACE THE PROJECTED ENROLLMENT BASED ON THE FIRST METHOD IN COLUMN TWO.
3. PLACE THE WEIGHT GIVEN THAT METHOD IN COLUMN THREE. *Please note the instructions for weights on the preceding page.*
4. MULTIPLY COLUMN TWO BY COLUMN THREE. PLACE THE RESULT IN COLUMN FOUR. *This is the factor projection for the first method.*
5. PLACE THE PROJECTED ENROLLMENT BASED ON THE SECOND METHOD IN COLUMN FIVE.
6. PLACE THE WEIGHT GIVEN THE SECOND METHOD IN COLUMN SIX.
7. MULTIPLY COLUMN FIVE BY COLUMN SIX. PLACE THE RESULT IN COLUMN SEVEN. *This is the factor projection for the second method.*
8. ADD COLUMN FOUR TO COLUMN SEVEN. PLACE THE RESULT IN COLUMN EIGHT. *This is the projected enrollment based on student interest, a composite of the two methods chosen.*

   This completes the combination of methods. If no further changes or adjustments are to be made, the results may be moved to Step Two of the Procedures Summary.

PLANNING YEAR

Col. 1 Program	Col. 2 Student Interest Projection One	Col. 3 Student Interest Weight One	Col. 4 Factor One Projection

IV. HOW TO MODIFY AND EXPAND THE CONTENTS OF TAB TWO TO MEET LOCAL NEEDS

This TAB has presented several methodologies for assessing student interest in vocational education programs. You, as a local administrator, may determine which methods are most convenient and reliable in your specific situation. These results may then be combined with information developed in the following tabs in order to state desired enrollment in each vocational education program.

V. USEFUL SOURCES OF INFORMATION

A. Local Sources

Testing Office

Counseling and Guidance Department

Division of Research

B. Written Sources

American College Testing Program. Handbook for the ACT Career Planning Program, grades 8-11. Iowa City: Author, 1974.

Darley, J.G., & Hagenah, T. Vocational interest measurement. Minneapolis: University of Minnesota Press, 1955.

TAB THREE: LABOR MARKET DEMAND

CONTENTS

I. INTRODUCTION

II. ALTERNATIVE METHODS FOR COMPLETING STEP THREE OF THE PROCEDURES SUMMARY

  A. Method One: Professional Judgement

  B. Method Two: Local Survey Data

  C. Method Three: Regional Econometric Data

III. COMBINING RESULTS OF THE METHODS

IV. HOW TO MODIFY AND EXPAND THE CONTENTS OF TAB THREE TO MEET LOCAL NEEDS

V. USEFUL SOURCES OF INFORMATION

I. INTRODUCTION

Although placement is not the only and may not even be the primary goal of vocational training, the opportunity for employment in a given occupation is certainly one of the strongest motivations toward continuing or expanding programs. Unfortunately, in most areas there exists little or no usable labor market information for the local vocational administrator. Step Three of the Procedures Summary is aimed at assisting the administrator in developing this type of information so that it can be used not only by the planner, but also by students and members of the community in assessing career opportunities. This TAB provides several different starting points in the process since different areas are likely to have greatly differing data and processing capabilities available.

A first step in accurately assessing labor market demand for program graduates is matching program titles to job titles. In many cases this task should be carried out in cooperation with a local vocational advisory council. For federally - standardized job titles, references are included at the end of this TAB.

In some areas it is possible that there will not be adequate state, regional or local projections for job demand by occupation. Where this occurs and some data are desired for future job demand, a method is suggested using national data supplied by the Census and the Bureau of Labor Statistics. This will provide a projection of local employment based on national averages and 1970 Census employment data for the local area.

II. ALTERNATIVE METHODS FOR COMPLETING STEP THREE OF THE PROCEDURES SUMMARY

One of the most salient features of current labor market forecasting is the great variety of information available in different areas of the country. The three methods of completing Step Three take this into account by providing techniques using different data bases.

Method One (professional judgement) requires little outside information and is very useful for preliminary attempts. This is often essential in getting used to the concept of using labor market information.

Method Two contains two alternatives: where local labor market surveys have been conducted, this is often the best source of information, especially where the occupations considered are not closely geared to the industrial economy. However, in many areas, local or regional data are not available. As a second alternative, a method is presented which uses 1970 Census occupational data and national average job demand increases available from the Bureau of Labor Statistics.

Method Three is offered as an example for those areas where detailed regional econometric projections have been made. The example uses data developed for Michigan Economic regions and is in the form of five-year regional labor market projections. Although the format for other areas may vary somewhat, this illustrates the basic technique in using this type of data.

A. METHOD ONE: PROFESSIONAL JUDGEMENT

Since the development of adequate labor market information is in many cases a difficult and time-consuming task, the professional judgement method allows the planner to make preliminary estimates and continue the planning process while better information is being developed. The technique involves not going to the labor market information directly, but more simply estimating the prospects for graduates of each program. If prospects in a particular profession seem better, the planner estimates some increase in jobs available for graduates in that program. These estimates may be placed in the data entry sheet on the following page.

TAB THREE

PROFESSIONAL JUDGMENT DATA SHEET

Program	1977	1978	1979	1980	1981	1982

If no further changes or adjustments are to be made, these projections may be moved to Step Three of the Procedures Summary.

II.B. METHOD TWO: LOCAL SURVEY DATA

Method Two is intended to provide the framework for calculating the number of graduates of each program that may reasonably be expected to find jobs using the skill they were trained in. This is sometimes referred to as "labor market demand." However, this TAB refers to that portion of the labor market which is accessible to entry - level or inexperienced applicants. As many jobs listed under each occupational category have skill or experience requirements which place those jobs out of reach for the program graduate, the estimates used in this TAB will not correspond to listings provided by state or federal agencies for the same job categories. They are based instead on combining those figures with the results of past placement efforts in the Local Education Agency's area.

DEFINITIONS

1. *Skill-Related Placement* - Placement by the Local Education Agency or related agency in: a) a job related to the skill learned by the graduate in the program, or, b) advance training or higher education in the same skill that the graduate studies in the program.
2. *Placement Data* - Historic follow-up surveys which indicate which students have received jobs in their field of training or have gone on to further their education in that field.
3. *Occupational Demand Data* - Projections or surveys which indicate the number of jobs offered by specific occupation. For national average projections, see The Bureau of Labor Statistics Bulletin 1737, Tomorrow's Manpower Needs, appendix D.
4. *Placement Factor* - The rate or percentage of jobs in a given occupation that has been filled in the past by vocational graduates. This is normally a fairly small percent since many of the jobs under occupational demand data are not entry-level positions.
5. *Direct Placement Opportunity* - Some form of commitment (such as expressed interest in an apprenticeship program) by an employer to accept a vocational program graduate.
6. *Planning Area* - The area which: (1) is the service area for the vocational programs, or (2) the labor market area, or area within which program graduates are expected to look for jobs.

DATA REQUIRED

1. **PLACEMENT DATA FOR EACH PROGRAM.** *This should include the number of graduates by program who have obtained jobs in that skill area. Where possible, three years of data should be used to eliminate annual fluctuations.*

2. **OCCUPATIONAL DEMAND DATA FOR EACH OCCUPATION** *(corresponding to each program). This may include both general employment data (such as regional manpower surveys) and specific employer surveys. General employment projections (data not related to direct placement opportunities) should include estimates both for the planning year and for every year that placement data is available.*

3. **IF THE ALTERNATE TO METHOD TWO IS USED, THE FOLLOWING ARE REQUIRED:**
   a) Bureau of Labor Statistics Bulletin 1737, Tomorrow's Manpower Needs, vol. IV, appendix D. This lists national employment projections as well as the national industry-occupational matrix.
   b) 1970 Census Tract Reports, detailed occupational listings. For Standard Metropolitan Statistical Areas, this is table 171. For non - SMSA tracts, this data may need to be recovered from the fourth count census tapes.

PROCESSING STEPS

1. ENTER PROGRAM NAMES IN COLUMN ONE.

2. ENTER THE AVERAGE OF THE LAST THREE YEARS PLACEMENTS FOR THAT PROGRAM IN COLUMN TWO.

3. ENTER THE AVERAGE OF THE LAST THREE YEARS JOB DEMAND DATA FOR THAT PROGRAM IN COLUMN THREE.

4. DIVIDE COLUMN TWO BY COLUMN THREE AND PLACE THE RESULT IN COLUMN FOUR. *This is the Placement Factor.*

5. PLACE THE PROJECTED JOB DEMAND IN COLUMN FIVE.

6. MULTIPLY COLUMN FOUR BY COLUMN FIVE. *This is the projected skill-related placement.*

7. PLACE THE DIRECT PLACEMENT OPPORTUNITIES IN COLUMN SIX. *This figure is used directly; there are no calculations necessary.*

If both factored placement and direct placement opportunities are used for the same program, the total skill-related placement is the sum of two.

This completes Method Two. If no further changes or adjustments are to be made, these projections may be transferred to Step Three of the Procedures Summary.

PLANNING YEAR

Col. 1 Program	Col. 2 Past Average Placements	Col. 3 Past Average Job Demand	Col. 4 Placement Factor	Col. 5 Projected Job Demand	Col. 6 Prejected Skill-Related Placement

METHOD TWO - ALTERNATE

The following method will provide data to be inserted in place of local data in columns three and five on the data - entry sheet.

PROCESSING STEPS

1) ASCERTAIN ALL CENSUS TRACTS IN YOUR PLANNING AREA.

2) TOTAL THE NUMBER OF WORKERS IN EACH OCCUPATION THAT CORRESPONDS TO YOUR VOCATIONAL PROGRAMS (*from the Detailed Occupational Listings in the 1970 Census Tract Reports*).

3) ENTER THE TOTAL OF ALL TRACTS FOR EACH OCCUPATION IN COLUMN THREE.

4) *Bureau of Labor Statistics Bulletin 1737 contains total national employment by occupation for 1970 and 1980.* TAKE THE 1970-80 PERCENT INCREASE FOR EACH OCCUPATION AND DIVIDE BY TEN. *This is the average annual increase in employment for that occupation.*

5) MULTIPLY THE AVERAGE ANNUAL INCREASE BY THE NUMBER OF YEARS BETWEEN 1970 AND THE PLANNING YEAR. *Example: if the planning year is 1977 and the average annual increase in 10%, this would be a 70% total increase.* CONVERT THIS TO A DECIMAL *(.70).*

6) MULTIPLY COLUMN THREE BY 1 + THE TOTAL INCREASE. *Place the result in column five.*

7) CONTINUE WITH STEP SIX OF THE TAB THREE PROCESSING STEPS.

C. METHOD THREE: REGIONAL ECONOMETRIC DATA

In response to the urgent need for reliable labor market information at the local and regional levels, many state and regional agencies have turned to the task of developing regional econometric models. These models are of the same type as those used to provide estimates for the national economy, but in addition contain variables and adjustments unique to each local area or region. Each model is therefore suited to making projections only for that region.

The most common form of projection generated by these models is that of future employment by industry; that is, the number of jobs in each industry or industrial category. Most frequently, individual industries are aggregated into larger industrial groupings. The example presented here, created for 14 regional areas in Michigan, has at maximum 22 industrial groupings.

To obtain occupational forecasts from the industrial projections, a manual called the National Industry-Occupational Employment Matrix is used. This document is published by the Bureau of Labor Statistics and lists the percentage of each occupation in each industry. This is divided into two tables, one by occupation, the other by industry. The matrix is also available on computer tape, and frequent use would seem to dictate this alternative.

Although local models will vary in construction and output, the following pages list a sample set of operations for processing a set of local industry data.

DATA REQUIRED

1. Some form of industrial employment projection is required. Generally, this will take the form of projected employment for aggregates of industrial categories: for example, all durable goods industries. These categories will be linked to the Standard Industrial Code of that industry or industrial group.

2. In addition to the local or regional industrial projection, some form of the Industry-Occupational matrix is needed. As previously referenced, the basic form is contained in Bureau of Labor Statistics Bulletin 1737. Some state employment agencies have localized and updated this matrix.

PROCESSING STEPS

NOTE: in contrast to earlier data sheets, each data sheet in this operation is for ONE OCCUPATION ONLY. *Do not list more than one occupation on each data sheet.*

1. PLACE THE INDUSTRIAL CATEGORIES FROM THE REGIONAL PROJECTION IN COLUMN ONE. *These should be prefixed by the Standard Industrial Code (SIC) for each category. The SIC is necessary to insure proper meshing of categories.*

2. PLACE THE INDUSTRIAL PROJECTIONS FOR EACH CATEGORY IN COLUMN TWO.

3. FROM THE INDUSTRY-OCCUPATIONAL MATRIX, PLACE THE PERCENTAGE OF THAT INDUSTRY THAT ARE IN THE GIVEN OCCUPATION. *(appendix F in the BLS form).*

4. MULTIPLY COLUMN TWO BY COLUMN THREE. PLACE THE RESULT IN COLUMN FOUR. *This is the projected number of that occupation in each industrial company.*

5. ADD THE RESULTS OF EACH CATEGORY IN COLUMN FOUR. *This sum is the total projected employment for that occupation.*

6. *Column Five Is A Check.* PLACE THE PERCENT OF THAT OCCUPATION THAT WORK IN EACH INDUSTRIAL CATEGORY *(appendix G in the BLS form)* IN COLUMN FIVE. *The sum of column five should equal approximately 100 percent.*

PLANNING YEAR

Col. 1 (S.I.C.)	Col. 2 INDUSTRIAL CATEGORY	Col. 3 INDUSTRIAL PROJECTION	Col. 4 INDUSTRY - OCCUPATIONAL PERCENT	Col. 5 PROJECTED WORKERS	Col. 6 OCCUPATIONAL INDUSTRIAL PERCENT

IV. HOW TO MODIFY AND EXPAND TAB THREE TO MEET LOCAL NEEDS

One of the areas where greatest improvement is possible is that of labor market research. While a great deal has been done to analyze the national labor force, there are very few useful projections for local areas. To fill this gap, the local agency should develop a program of employer surveys to determine those occupations providing opportunities for jobs. Although local surveys do add to the agency's work load, a properly run survey can provide a great deal of information at acceptable cost. Greater benefits may be realized if such local surveys can be run in cooperation with (or by) such other agencies as local manpower planning groups or CETA prime sponsors.

Local survey results can also be used in conjunction with regional econometric models. The local survey provides a benchmark to indicate area of the labor market which the agency is not reaching. By comparing present survey results to present labor market data, realistic percentages of available jobs can be established and the results applied to projections derived from the econometric models.

Improved placement results may be achieved through closer cooperation with employers in establishing cooperative and apprenticeship programs. Students with prior work experience (cooperative or apprenticeship) are likely to fare much better in the labor market than those without such experience. Cooperative arrangements may also have the effect of lowering capital and operating costs for some programs.

V. USEFUL SOURCES OF INFORMATION

For matching programs to occupational titles, the following document may be useful:

Bureau of Labor Statistics, "Matching Occupational Classifications to Vocational Education Program Codes," Tomorrow's Manpower Needs, Supplement Three, U.S. Dept. of Labor, 1975

For initiating and analyzing local labor market surveys:
Morton, J.E. Handbook for Community Manpower Surveys, Upjohn Institute, 1972.

For a more detailed explanation of the use and development of econometric models for labor market forecasting:
Morton, J.E. On Manpower Forecasting, Upjohn Institute, 1968.

Other Sources:
Directory of Occupational Titles, Bureau of Labor Statistics, U.S. Dept. of Labor. (Job descriptions, earnings, working conditions, training required and 10-year national projections).

Vocational and Technical Annual Report, U.S. Office of Education, (national data on reimbursed vocational programs: enrollments, graduates and costs).

TAB FOUR: PROGRAM ENROLLMENT PROJECTIONS

CONTENTS

I. INTRODUCTION

II. ALTERNATIVE METHODS FOR COMPLETING STEP FOUR OF THE PROCEDURES SUMMARY

  A. Method One: Professional Judgement

  B. Method Two: Factor Weighting

  C. Method Three: Placement Weighting

III. COMBINING THE RESULTS OF THE METHODS

IV. HOW TO MODIFY AND EXPAND THE CONTENTS OF TAB FOUR TO MEET LOCAL NEEDS

I. INTRODUCTION

TAB FOUR uses the results of enrollment projections based on student interest and labor market demand to create a set of program enrollment projections. Although the complexity of the methods for accomplishing this varies considerably, all rely on the local administrator placing a value on each of the projections. This may be based on past experience, knowledge of the limits of the data involved, or the particular emphasis the local district wishes to place on student interest or placement in the labor market.

II. ALTERNATIVE METHODS FOR COMPLETING STEP FOUR OF THE PROCEDURES SUMMARY

In each local area, techniques of analyzing local data and preferences in the use of data will vary. For that reason, several methods are available for completing TAB FOUR.

Method One (professional judgement) provides the opportunity to evaluate the data of the previous TABS without any mathematical calculations. It is not only the simplest method, but in many ways the most flexible. Its use is recommended where rapid changes are being made and as a benchmark against which other methods may be tested.

Method Two relies on specifically placing a numerical valuation on each of the two factors. That is, student interest and labor market demand are weighted by the planner according to their usefulness in the planning process. These mathematical weights are then applied to the projections to arrive at a composite projection.

Method Three also "weights" the factors, but in a manner that allows the planner to express the weight directly in terms of placement and student interest. This technique may be more comprehensible and allow a clearer view of the decisions being made.

It should be noted that, since information on specific programs will vary, the same method need not be used for all programs. The best or most suitable method or methods for each program should be selected.

METHOD ONE: PROFESSIONAL JUDGEMENT

The professional judgement method for TAB FOUR requires the planner to informally examine the results of tabs TWO and THREE, consider their usefulness, and use one or a combination of both to arrive at a target program. As with the other methods, the planner must have formed some idea of portion of the graduates who will seek jobs in that field, and how many interested students there should be for each space available. When these decisions have been made, the projections may be placed on the data sheet on the following page for examination.

TAB FOUR

PROFESSIONAL JUDGMENT DATA SHEET

Program	1977	1978	1979	1980	1981	1982

If no further changes or adjustments are to be made, these projections may be moved to Step Four of the Procedures Summary.

METHOD TWO: FACTOR WEIGHTING

Method two uses the concept of applying a weight or estimate of value to labor market and student projections to arrive at projected program enrollments. Thus in calculating the projected enrollment, the final figure will fall somewhat between the student interest and labor market projections. The weight expresses the planner's opinion of the importance of that projection relative to the other. For example, a weight of .25 for labor market and .75 for student interest expresses the idea that for projection purposes, student interest has three times the validity of labor market projections. This "validity" may be due to personal preference, availability of data or accuracy of projections. While there is no one "correct" value, it is suggested that the planner begin by assigning relatively equal weights to each factor.

DATA REQUIRED FOR METHOD TWO

1. RESULTS OF STEPS TWO AND THREE.
2. *Factor weights for each step.* IT IS IMPERATIVE THAT THE SUM OF THE TWO WEIGHTS BE EQUAL TO ONE. *Each weight is expressed as a decimal, such as .25.*

   Example: a valid set of weights would be .25 and .75, or .6 and .4 .6 and .7 would NOT be a valid set of weights, since the sum (1.3) is greater than one.

PROCESSING STEPS

1. PLACE PROGRAM NAMES IN COLUMN ONE *(Data sheet next page)*
2. PLACE PROJECTED ENROLLMENT BASED ON STUDENT INTEREST IN COLUMN TWO. *This comes from Step Two of the Procedures Summary.*
3. PLACE THE STUDENT INTEREST WEIGHT IN COLUMN THREE. *Please note the instructions for weights on the required data page.*
4. MULTIPLY COLUMN TWO BY COLUMN THREE. PLACE THE RESULT IN COLUMN FOUR. *This is the "factor projection" for student interest.*
5. PLACE THE ENROLLMENT BASED ON LABOR MARKET DEMAND IN COLUMN FIVE.
6. PLACE THE LABOR MARKET WEIGHT IN COLUMN SIX. *Please note the instructions for weights on the required data page.*
7. MULTIPLY COLUMN FIVE BY COLUMN SIX. PLACE THE RESULT IN COLUMN SEVEN. *This is the "factor projection" for labor market demand.*
8. ADD COLUMN FOUR TO COLUMN SEVEN. PLACE THE RESULT IN COLUMN EIGHT. *This sum is the projected program enrollment, a composite of the two factor projections.*

This completes Method Two. If no further adjustments are used, transfer the results to Step Four of the Procedures Summary.

PLANNING YEAR

Col. 1 Program	Col. 2 Student Interest Projection	Col. 3 Student Interest Weight	Col. 4 Factor Projection

II.C. METHOD THREE: PLACEMENT WEIGHTING

Method Three is designed to allow the administrator to use the results of the previous TABS to create a single projection, using a slightly different weighting system than that employed in Method Two. These two "weights" are described as the desirable student-interest ratio and the desirable skill-related placement ratio. The optimum size for each program is determined by the desirable skill-related placement ratio and the projected skill-related placement. The desirable student interest ratio indicates the number of interested students necessary to achieve the optimum program size.

It is important to realize that the desirable student interest ratio and the skill-related placement ratio are not mandated or technically derived figures, but values which state the importance that the Local Education Agency places on job demand and student interest as factors determining enrollment. Counseling and placement priorities may then be set accordingly.

DEFINITIONS

1. *Desirable Student-Interest Ratio* - A decimal figure indicating the amount of student interest desired by the district for each training station or training position available. Example: if you prefer to have two interested students for each position available in a welding program, then the Desirable Student-Interest Ratio for welding would be 2.00.

2. *Desirable Skill-Related Placement Ratio* - In most programs, a number of students participate who do not wish employment in that field, but simply desire the learning experience. This ratio indicates the percent of each class that you expect to seek employment in that field directly upon graduation, and whom you expect to assist with placement. Example: if your goal is to place 40 percent of the graduates in jobs related to that skill, the Desirable Skill-Related Placement Ratio would be .40. As with the desirable student-interest ratio, this number is expressed as a decimal.

3. *Optimum Program size* - the target size of each program in the projected year, based on projected job demand and the desirable skill-related placement ratio.

METHOD THREE DATA REQUIRED

1. RESULTS OF TABS TWO AND THREE.
2. LOCAL JUDGEMENTS ON DESIRABLE RATIO OF STUDENT INTEREST TO PROGRAM OPENINGS.
3. LOCAL JUDGEMENTS ON DESIRABLE RATIO OF PROGRAM OPENINGS TO PROJECTED SKILL-RELATED JOB OPENINGS.

PROCESSING STEPS

1. INDICATE THE PLANNING YEAR AT THE TOP OF EACH DATA ENTRY SHEET.
2. PLACE PROGRAM NAMES IN COLUMN ONE. *(Data sheet next page)*
3. PLACE THE RESULTS OF TAB THREE IN COLUMN TWO.
4. PLACE THE DESIRABLE SKILL-RELATED PLACEMENT RATIO IN COLUMN THREE.
5. DIVIDE COLUMN TWO BY COLUMN THREE. PLACE THIS FIGURE IN COLUMN FOUR. *This is the optimum program size.*
6. PLACE THE DESIRABLE STUDENT INTEREST RATIO IN COLUMN FIVE.
7. MULTIPLY COLUMN FOUR BY COLUMN FIVE. PLACE THIS IN COLUMN SIX. *This indicates desirable student interest based on the optimum program size.*
8. PLACE THE RESULTS OF TAB TWO (COLUMN SIX) IN COLUMN SEVEN.
9. SUBTRACT COLUMN SEVEN FROM COLUMN SIX. PLACE THE RESULT IN COLUMN EIGHT.
10. TAKE THE LOWER (SMALLER) FIGURES FROM COLUMN FOUR AND COLUMN SEVEN AND PLACE IT IN COLUMN NINE. *This is the Projected Program Enrollment. Example: if the figure in column four is 60 students and the figure in column seven is 80 students, place the 60 students from column four in column nine. This completes TAB FOUR.*

Column eight is adjustment in student interest. A POSITIVE *number in column eight indicates* ENCOURAGE STUDENT INTEREST. *A* NEGATIVE *number in column eight indicates* DIVERT STUDENT INTEREST *to other programs.*

PLANNING YEAR

Col. 1 Program	Col. 2 (Tab 3)	Col. 3 Desirable Placement Ratios	Col. 4 Optimum Program Size	Col. 5 Student Interest Ratio	Col. 6 Desirable Student Interest	Col. 7 (Tab 2)	Col. 8 Adjust Student Interest	Col. 9 Projected Program Size

III. COMBINING THE RESULTS OF THE METHODS

Although one of the primary goals of vocational education is job placement, specific programs vary considerably in their job orientation. Therefore, not all will be suited to the same method of program projection. Programs which are oriented to immediate job placement are well adapted to using projections based on the placement weighting method. Other programs, such as a general graphics or business practices program may be more directly oriented to student interest with less emphasis on direct placement. Better results may be obtained if this type of program is projected through the factor weighting method, where the emphasis on placement can more easily be minimized. This is also a valid use of the professional judgement method. In cases where a numerical decision cannot be arrived at, other factors may enter into the process that are better accounted for under professional judgement than in the more structured methods.

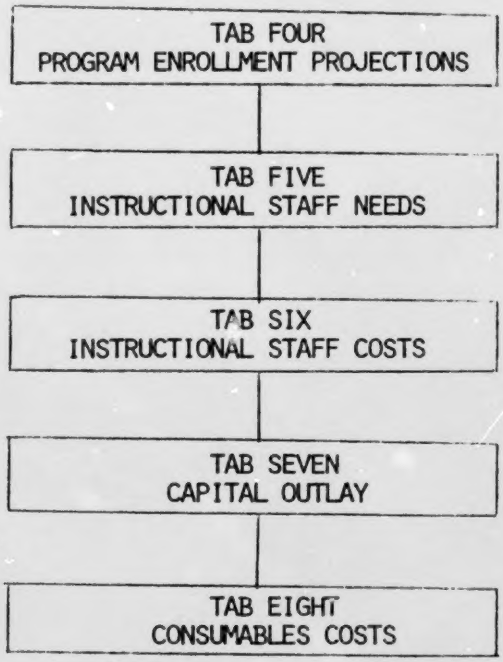
IV. HOW TO MODIFY AND EXPAND TAB FOUR TO MEET LOCAL NEEDS

The principal component of TAB FOUR is the weighting or valuing process between the demands of the labor market and student and local interest. This tab uses the numerical expressions of those judgements. One of the greatest refinements to the process is the alteration of those judgements to the realities of community participation and the job market. As the process is used and reused to provide target program enrollments, the effects of those judgements will become clearer, and should serve as a stimulus for discussion and debate over the proper roles of the labor market and student interest.

Where a strong community interest exists in particular programs, this may also serve as a third major input to enrollment projections. If this interest can in any way be quantified, it may be entered into the factor weighting process. If data are readily available, a third column may be established and a weight assigned; again, the only requirement is that the sum of the weights be equal to one.

PART TWO

Part Two of the Policy Information System takes the set of program projections developed in Part One and uses these to estimate the staff, facilities and other costs associated with each program at the projected enrollment. These estimates are based on the projected enrollments and the current operating costs of each program. Where current data are not available for a program, it may be necessary to estimate costs, staff and facilities requirements from either similar programs or from statewide or other data.


TAB FOUR
PROGRAM ENROLLMENT PROJECTIONS
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TAB FIVE: INSTRUCTIONAL STAFF NEEDS

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I. INTRODUCTION

II. ALTERNATIVE METHODS FOR COMPLETING STEP FIVE OF THE PROCEDURES SUMMARY

  A. Method One: Professional Judgement

  B. Method Two: Class Size Formula

III. COMBINING THE RESULTS OF THE METHODS

IV. HOW TO MODIFY AND EXPAND THE CONTENTS OF TAB FIVE TO MEET LOCAL NEEDS

V. USEFUL SOURCES OF INFORMATION

I. INTRODUCTION

Adequate and efficient staffing of vocational programs requires that some projections be made of future staff needs by specific program. This TAB uses the optimum programs established in TAB FOUR to estimate the instructional staff requirements for each planning year. By creating sufficient lead time for the adjustment of program staff to different levels, the Local Education Agency may make minimal staff adjustment problems and provide the maximum teaching opportunities with existing and anticipated staff.

II. ALTERNATIVE METHODS OF COMPLETING STEP FIVE OF THE PROCEDURES SUMMARY

Depending on the information available, a great deal of flexibility can be built into projections of instructional staff. This will be affected by such factors as staff turnover, retraining or cross-training, multiple qualifications and opportunities for cooperative or outside instruction. Since these may change very rapidly, they are fairly difficult to build into a projection with any degree of confidence.

Where requirements, qualifications and teaching methods are changing rapidly and new programs being introduced, Method One (professional judgement) may be the most convenient and accurate method of introducing these factors into consideration.

Method Two provides a firmer structure for considering staff requirements, although there is less opportunity to build in outside factors. This method is best used with ongoing programs where such factors as training station capacity and pupil-teacher ratios are well established. Where new programs or unorthodox training methods are being considered, Method One may be used to supplement Method Two.

A. METHOD ONE: PROFESSIONAL JUDGEMENT

The professional judgement method relies on the ability of the planner to predict important factors in the supply of instructional staff, such as turnover rate, cooperative instruction opportunities and changes in required pupil-teacher ratios. By using these factors in conjunction with current program levels, requirements for the target programs in TAB FOUR may be estimated. These may then be entered on the data entry sheet on the following page.

TAB FIVE

PROFESSIONAL JUDGMENT DATA SHEET

Program	1977	1978	1979	1980	1981	1982

If no further changes or adjustments are to be made, these projections may be moved to Step Five of the Procedures Summary.

B. METHOD TWO: CLASS SIZE FORMULA

Method Two uses the programs arrived at in Step Four together with existing average or mandated class sizes and staff requirements to arrive at a projected number of teaching personnel required. The method used is designed to provide an estimate of acceptable accuracy while still retaining a relatively simple format and procedure. For that reason, some figures may need to be adjusted where local conditions indicate a change from present requirements. The adjustment may be made within the format (adjust the average class size) or at the end of the calculations.

DEFINITIONS

1. *Total course enrollment* - the total number of students (present or future) enrolled for each program listed.

2. *Average class size* - Average, expected or mandated number of students in each class or section.

3. *Current Teachers Available* - The number of current teachers qualified for each program that are expected to be available in the planning year.

4. *Teachers Required* - The number of teachers that will need to be added to teach each program at the target enrollment level.

NOTE: teaching staff requirements are expressed in terms of full - time equivalents (FTE). Since staff assignments may be split between programs, this number may be a decimal fraction.

Example: welding may require 1.6 FTE staff members.

DATA REQUIRED

1. RESULTS OF TAB FOUR.
2. AVERAGE OR MANDATED SIZE OF EACH PROGRAM CLASS OR SECTION.
3. CURRENT TEACHING STAFF ASSIGNMENTS BY PROGRAM.
4. CURRENT YEARS TEACHERS AVAILABLE.

PROCESSING STEPS

1. ENTER PROGRAMS IN COLUMN ONE. *(Data sheet next page)*
2. ENTER PROJECTED COURSE ENROLLMENT *(from TAB FOUR)* IN COLUMN TWO.
3. ENTER AVERAGE CLASS SIZE IN COLUMN THREE.
4. DIVIDE COLUMN TWO BY COLUMN THREE AND PLACE THE RESULT IN COLUMN FOUR. *This is the teaching staff required.*
5. ENTER CURRENT TEACHING STAFF AVAILABLE FOR EACH PROGRAM IN COLUMN FIVE.
6. SUBTRACT COLUMN FIVE FROM COLUMN FOUR. PLACE THE RESULT IN COLUMN SIX. *This is teaching staff adjustment. NOTE: in the case of decreasing program size,* THIS MAY BE A NEGATIVE NUMBER. *This indicates the number of teaching staff to be released from that program only, not from the total teaching staff.*

PLANNING YEAR

Col. 1 Program	Col. 2 Projected Course Enrollment	Col. 3 Class Size	Col. 4 Teachers Required	Col. 5 Teachers Available	Col. 6 Personnel Adjustment

III. COMBINING THE RESULTS OF THE METHODS

Although Method Two provides a more structured framework for calculating future staff needs, that structure will not always be necessary. In some programs, especially new programs, there will be no continuing staff and requirements may be clearly spelled out by state or other regulations. In such cases, the number of teachers required for a given class size will be immediately apparent and time and effort can be saved by entering that data via the professional judgement method.

In some cases, Method Two may be used although it is apparent that some adjustments need to be made. Where this occurs, do not hesitate to adjust specific projections where local conditions indicate that staffing requirements may change or different instructional methods used. The planning process is intended to be flexible and responsive to changing conditions.

IV. HOW TO MODIFY AND EXPAND TAB FIVE TO MEET LOCAL NEEDS

Information in several areas of TAB FIVE can be refined and improved as conditions permit. These primarily concern increased knowledge of what staff will be available and actual program qualifications, especially where staff members are qualified in more than one area.

One item that will aid in staff projection is a chart of teacher qualifications by program. Expressed in fractions of full-time equivalents, the chart should emphasize any increased capabilities and allow the district to benefit fully from staff undergoing cross-training. Such a system may already be built into scheduling procedures and may be adopted for future projections. This might also be combined with a chart of future availability of current staff.

V. USEFUL SOURCES OF INFORMATION

Learning a Living Across the Nation. Project Baseline, First and Second National Reports, Vol. 1 & 2 (Arthur Lee, Project Director). Flagstaff: Northern Arizona University, 1972-73.

National Advisory Council on Education Professions Development. Vocational Education: Staff Priorities for the 1970's. Washington, D.C., January, 1973.

The Preparation of Teachers for Vocational Education. Project Baseline, Project Supplemental Report (Gordon I. Swanson, Coordinator). Flagstaff: Northern Arizona University, 1974.

Division of Vocational and Technical Education. Trends in Vocational Education, 1972. Voc. Ed. Info. No. 2. Washington: Bureau of Adult, Vocational and Technical Education, U.S. Office of Education, 1972.

TAB SIX: INSTRUCTIONAL STAFF COST

CONTENTS

I. INTRODUCTION

II. ALTERNATIVE METHODS OF COMPLETING STEP SIX OF THE PROCEDURES SUMMARY

A. Method One: Professional Judgement

B. Method Two: Mathematical Calculation

III. COMBINING THE RESULTS OF THE METHODS

IV. HOW TO MODIFY AND EXPAND THE CONTENTS OF TAB SIX TO MEET LOCAL NEEDS

V. USEFUL SOURCES OF INFORMATION

I. INTRODUCTION

When the number of full time equivalent instructional personnel has been set for each planning year, the next step is to associate a cost with the personnel for each program. This cost is the total amount of money which will be expended for the compensation of staff including salary, fringe benefits and reimbursed expenses such as travel overtime or special activities. Where new staff are to be added because of expansion or replacement, an adjustment is made to reflect the entry of a staff member at a lower than average salary. As salaries and benefits are projected into the future, allowance should be made for salary and benefit increases, inflation, changes in working conditions and changes in funding requirements. These may be added to the model as the techniques for dealing with them are developed.

II. ALTERNATIVE METHODS FOR COMPLETING STEP SIX OF THE PROCEDURES SUMMARY

Although in some cases it is possible to calculate contract costs with a great degree of precision, the result will not necessarily bring the same degree of accuracy to a projection of future instructional personnel costs. As in TAB FIVE, the result will depend greatly on other personnel factors. This TAB is designed to provide a guide or approximation of future costs.

Method One (Professional Judgement) is desirable where a great deal of change is affecting teaching programs. Such factors as cooperative teaching and assumption of costs by other educational agencies will have a dramatic impact upon instructional personnel costs. Since many of these are political factors subject to negotiation, they are best entered through the professional judgement method.

Method Two provides a structure for calculating cost increase and the differential between starting and continuing salaries once the salary averages are known. This ignores some outside factors but provides a very usable estimate where a substantial degree of stability in programs is anticipated.

A. METHOD ONE: PROFESSIONAL JUDGEMENT

Method One should be used where estimates require a great deal of flexibility and may change rapidly. It is desirable to include as many outside factors as possible, although this is dependent upon the administrator's background, experience and information sources. As new factors are included, several "runs" or projection attempts may be necessary before a satisfactory result is achieved. The data entry sheet on the next page is provided to record projections.

TAB SIX

PROFESSIONAL JUDGMENT DATA SHEET

Program	1977	1978	1979	1980	1981	1982

If no further changes or adjustments are to be made, these projections may be moved to Step Six of the Procedures Summary.

II.B. METHOD TWO: MATHEMATICAL CALCULATION

Method Two uses the enrollment projections from Part One and the teaching personnel requirements from TAB FIVE to project the instructional staff costs by program. The method relies on using current estimates of salaries and fringe benefits with average anticipated increases to the projection years.

DEFINITIONS

1. *Per member teaching staff cost* - The average total cost of one teaching staff member, including:

   1) basic salary

   2) average standard district fringe benefits

   3) average for other reimbursable expenses such as travel, overtime.

   This figure should be expressed as a single dollar amoung.

   Example:

basic salary	10,500
average fringe package	1,500
average other	250
per member staff cost	12,250

NOTE: two staff costs are required: one for continuing staff, one for new staff.

2. *Inflation factor* - The inflation factor is the rate of increase in per member staff cost and is calculated in the same way as a compound interest formula. Thus: if the projected inflation rate is 10%, the inflation factor is $(1+.10)^n$, where n is the number of years between the present year and the planning year.

   Example: the inflation rate is 10% and planning year is three years in the future.

   Inflation factor = $(1+.10)^3 = 1.331$

DATA REQUIRED

1. CURRENT FULL-TIME EQUIVALENT TEACHING STAFF REQUIREMENT BY PROGRAM.
2. TEACHING STAFF ESTIMATE FROM TAB FIVE.
3. AVERAGE PER MEMBER TEACHING STAFF COST, INCLUDING FRINGE BENEFITS AND OTHER EXPENSES.
4. PROJECTED YEARLY INCREASE IN SALARIES AND FRINGE BENEFITS (INFLATION RATE).

PROCESSING STEPS

1. ENTER PROGRAM NAMES IN COLUMN ONE. *(Data sheet next page)*
2. ENTER TOTAL PROJECTED STAFF REQUIREMENT IN COLUMN TWO. *This is a check. Columns three and eight together should equal this number.*
3. ENTER THE NUMBER OF CONTINUING STAFF IN COLUMN THREE.
4. ENTER THE CURRENT CONTINUING PER MEMBER STAFF COST IN COLUMN FOUR.
5. MULTIPLY COLUMN THREE BY COLUMN FOUR. PLACE THE RESULT IN COLUMN FIVE. *This is the total continuing staff cost.*
6. ENTER THE INFLATION FACTOR IN COLUMN SIX.
7. MULTIPLY COLUMN FIVE BY COLUMN SIX. PLACE THE RESULT IN COLUMN SEVEN. *This is the total projected continuing staff cost.*
8. ENTER THE TOTAL NEW STAFF IN COLUMN EIGHT. *This may be a negative number.*
9. ENTER THE NEW PER MEMBER STAFF COST IN COLUMN NINE. *NOTE: This is NOT the same cost as column four.*
10. MULTIPLY COLUMN EIGHT BY COLUMN NINE. PLACE THE RESULT IN COLUMN TEN. *This is the total new teaching staff cost.*
11. MULTIPLY COLUMN TEN BY COLUMN SIX. PLACE THE RESULT IN COLUMN ELEVEN. *This is the total projected new staff cost. This may be a negative number.*
12. ADD COLUMN SEVEN AND COLUMN ELEVEN. PLACE THE RESULT IN COLUMN TWELVE. *This is the total projected teaching staff cost.*

THIS COMPLETES TAB SIX.

NOTE ON TOTALS: *columns eight and eleven of TAB SIX may be negative numbers in the case of program reductions. When programs are totalled, negative numbers should be counted as ZERO, not the negative value. Failure to do this will reduce the apparent projected cost below the actual cost. If no further changes or adjustments are to be made, these projections may be moved to Step Six of the Procedures Summary.*

PLANNING YEAR

Col. 1 Program	Col. 2 Projected Staff (Tab 5, Col. 4)	Col. 3 Continuing Staff (Tab 5, Col. 5)	Col. 4 Continuing Per Member Cost	Col. 5 Total Estimated Continuing Cost	Col. 6 Inflation Factor

PLANNING YEAR

Col. 7 Total Projected Continuing Staff Cost	Col. 8 Total New Staff (Tab 5, Col. 6)	Col. 9 New Per Member Cost	Col. 10 Total New Staff Cost	Col. 11 Projected Total New Staff Cost	Col. 12 Projected Total Staff Cost

III. COMBINING THE RESULTS OF THE METHODS

As previously mentioned, there are some cases where each method has a particular advantage. It is therefore possible to "mix" the methods such that each is used only for some programs. If this is done, it is best to indicate all programs on each method, then block out those which are not used on that method. This will simplify the transfer of information to the Procedures Summary.

For some programs it may be advantageous to use Method Two but include some modifications. Where this is desired, it is usually better to adjust the final cost figure and note the reason rather than adjust the intermediate calculations. This will minimize confusion and also avoid the possibility of multiplying errors.

IV. HOW TO MODIFY AND EXPAND THE CONTENTS OF TAB SIX TO MEET LOCAL NEEDS

Further refinements can be made to projections of staff cost as better analysis is conducted of contract provisions, and as longer contract periods are used. Much remains to be done in particular to increase the accuracy of cost estimates for fringe benefits and related compensation. As business office procedures are refined to provide better estimates of current contract costs and as benefit packages are further standardized, these improvements should become an integral part of planning as well.

Other refinements may be added where actual cost deviates substantially from district averages. For some programs, instructional staff cost will be either substantially above or below average, depending on hiring practices and the relative demand for that particular specialty. Costs will also vary where cooperative programs are instituted, or where programs are operated by other agencies through cost-sharing or tax-splitting arrangements. As information on these alternatives becomes available, it should also be included in the planning process.

V. USEFUL SOURCES OF INFORMATION

Director of Personnel -- Local and Intermediate districts

Local Teachers Association

Michigan Blue Cross and Blue Shield Group Coordinator

District Business Manager

TAB SEVEN: CAPITAL OUTLAY

CONTENTS

I. INTRODUCTION

II. ALTERNATIVE METHODS OF COMPLETING STEP SEVEN OF THE PROCEDURES SUMMARY

  A. Method One: Professional Judgement

  B. Method Two: Mathematical Calculation

III. HOW TO COMBINE THE RESULTS OF THE METHODS

IV. HOW TO MODIFY AND EXPAND TAB SEVEN TO MEET LOCAL NEEDS

V. USEFUL SOURCES OF INFORMATION

I. INTRODUCTION

The term "capital outlay" refers to large program purchases for items which are not used up in the course of the year. Exact definitions of capital vary; some include a minimum amount such as $20,000, while others specify a minimum number of years the purchase must last. While there is no one definition, it is essential that the administrator define capital and be consistent in all programs. Note also that this refers only to the cost of items, not to the source of payment. Even where some form of outside reimbursement is expected, this should not be used to reduce the amount indicated under capital outlay.

A second concept essential to this step is that of the "training station." This is necessary to solidify the idea that as the number of students increases, the amount of physical capital needed to operate the program also increases. Although this may not be in direct proportion, the TAB uses the concept of per-station capital expenditure to aid in estimates for new or expanding programs.

II. ALTERNATIVE METHODS FOR COMPLETING STEP SEVEN OF THE PROCEDURES SUMMARY

As capital expenditures are among the most difficult types of expenditures to accurately classify and account for, the administrator may experience some difficulty in using new methods of calculation. Therefore, it may be desirable to make a first attempt using very rough estimates with the professional judgement method. This will provide the administrator with some experience in allocating capital expenditures. This may be especially true where the administrator is unsure of the physical requirements for some programs, where new programs are being introduced or where technology is causing rapid changes in capital requirements.

Method Two is better adapted to ongoing programs that have known capital requirements. This method insures that the basic cost estimates and cost increases are accounted for. Further refinements may be added as the administrator becomes more familiar with the process.

A. METHOD ONE: PROFESSIONAL JUDGEMENT

The Professional Judgement method represents a more exploratory approach to projection of capital outlay. With fewer directions provided, it allows the planner maximum freedom to experiment with different capital allocations and payment schedules. Where budgetary restrictions allow, the planner should attempt a number of payment rates and schedules to determine those which can give the agency the best financial position. It is assumed that this activity will be carried out in conjunction with the agency's business office. In fact, close coordination with business office activities is a necessary key to accurate and integrated planning projections.

The data arrived via the Professional Judgement method and presented on the data sheet on the next page should represent the total capital expenditure for each program. When the results are summed, they should equal the entire amount budgeted for vocational program capital expenditures.

TAB SEVEN

PROFESSIONAL JUDGMENT DATA SHEET

Program	1977	1978	1979	1980	1981	1982

If no further changes or adjustments are to be made, these projections may be moved to Step Seven of the Procedures Summary

B. METHOD TWO: MATHEMATICAL CALCULATION

Method Two projects the capital costs by program based on present estimates of capital costs for those programs plus a fixed inflation factor. The result is a projection of costs for the entire planning period. The planner should also indicate the year in which expenditures are expected to be incurred. In some local agencies, the entire cost must be budgeted for a single year; in others, the cost may be spread over a number of years, depending on the particular item. By indicating years in which expenditures are anticipated, a series of completed steps should also indicate general trends in capital expenditures.

DEFINITIONS

1. *Training station* - the number of physical positions alloted for each program, based on: (1) the number of students in each program, and (2) the number of students using each station.
   Example: if a program has 40 students and two students use each training position (e.g. one morning and one afternoons) then the program has 20 training stations.

2. *per - station estimated capital outlay* - Although capital expenditures are likely to be "lumpy" and not easily calculated on a per-station basis, some measure is needed to relate section size (number of training stations) to program cost. For some programs (those requiring single large pieces of equipment) this may be a very rough estimate. This, however, does not severely limit the validity of the process.

3. *Inflation factor* - the inflation factor for TAB SEVEN is calculated in exactly the same manner as that for TAB SIX. The only difference is that the cost increase used is that for capital expenditures instead of teaching staff cost.

DATA REQUIRED

1. TOTAL NUMBER OF TRAINING STATIONS FOR EACH PROGRAM, BASED ON THE PROJECTED NUMBER OF STUDENTS FROM TAB FOUR.
2. ESTIMATED PER-STATION CAPITAL OUTLAY FOR EACH PROGRAM.
3. AVERAGE ESTIMATED YEARLY INFLATION RATE FOR CAPITAL EXPENDITURES.

PROCESSING STEPS

1. ENTER PROGRAMS IN COLUMN ONE.
2. ENTER THE NUMBER OF TRAINING STATIONS FOR EACH PROGRAM IN COLUMN TWO.
3. ENTER THE ESTIMATED PER-STATION OUTLAY FOR EACH PROGRAM IN COLUMN THREE.
4. MULTIPLY COLUMN TWO BY COLUMN THREE. PLACE THE RESULT IN COLUMN FOUR. *This is the Total estimated capital outlay.*
5. ENTER THE INFLATION FACTOR IN COLUMN FIVE.
6. MULTIPLY COLUMN FOUR BY COLUMN FIVE. PLACE THE RESULT IN COLUMN SIX. *This is the total projected capital outlay for each program.*

This completes method two. If no further changes or adjustments are to be made, these projections may be transferred to Step Seven of the Procedures Summary.

PLANNING YEAR

Col. 1 Program	Col. 2 Number of Training Stations	Col. 3 Per-Station Est. Cap. Outlay	Col. 4 Total Estimated Cap. Outlay	Col. 5 Inflation Factor	Col. 6 Total Projected Cap. Outlay

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III. COMBINING THE RESULTS OF THE METHODS

One of the best ways of initiating the capital planning process is to use the professional judgement method for a number of preliminary runs to determine approximate requirements and cost schedules. When the planner has a "feel" for what various alternative are and types of cost schedules, the more structured format of method two can be used.

Method Two will be most effective with ongoing programs where physical requirements have been established and there is a reasonable estimate of cost increases. Where program requirements or other factors are changing rapidly, the planner may want to continue using the professional judgement method for those programs.

IV. HOW TO MODIFY AND EXPAND TAB SEVEN TO MEET LOCAL NEEDS

Further refinement of the capital planning process may be made in several areas. One is improving cost estimates. This will aid in projecting both the basic cost and in estimating cost increases. While most manufacturers will not commit themselves to a fixed price, some companies will provide estimates for the future costs of some types of equipment.

In many local agencies financed directly by local tax collections, there is no provision for budgeting capital expenditures, and many agencies bear the entire cost in the year of purchase even when this is not the most economical way of financing.

V. USEFUL SOURCES OF INFORMATION

District Business Manager

Building Bookkeeper

TAB EIGHT: CONSUMABLES COST

CONTENTS

I. INTRODUCTION

II. ALTERNATIVE METHODS FOR COMPLETING STEP EIGHT OF THE PROCEDURES SUMMARY

  A. Method One: Professional Judgement

  B. Method Two: Mathematical Calculation

III. HOW TO COMBINE THE RESULTS OF THE METHODS

IV. HOW TO MODIFY AND EXPAND TAB EIGHT TO MEET LOCAL NEEDS

V. USEFUL SOURCES OF INFORMATION

I. INTRODUCTION

The term "consumables" refers to those items purchased for a program which are expended in the course of the year. Typically, this might include construction materials, some protective devices and small tools. This is to some extent a "catch-all" category which includes items which cannot be counted toward capital cost or staff cost. Because of this characteristic, estimation of consumables may be more difficult than other categories. However, for planning purposes they are usually small enough that comparatively rough estimates will be sufficient. As with capital, it may also be difficult initally to allocate these costs on a per - training station basis.

II. ALTERNATIVE METHODS FOR COMPLETING STEP EIGHT OF THE PROCEDURES SUMMARY

As in TAB SEVEN, there are two methods included in TAB EIGHT. The Professional Judgement method is best adapted to recording a set of initial estimates (probably from recent past expenses) that are a useful set of comparison figures and form the basis for further refinement.

Method Two is most useful when the basic cost estimates have been compiled and some estimate of cost increase is available. As the method requires allocating expenditures on a per - training station basis, it is more useful with large programs containing few "lumpy" or large single purchases. However, some refinements and correcting factors may also be added to this method to suit local needs and capabilities.

A. METHOD ONE: PROFESSIONAL JUDGEMENT

Many vocational programs may be expected to have a small consumables cost with a minimal impact on the planning process. This means that the cost of consumables will not have a significant effect on whether the program may be offered or the number of students that may be enrolled in that program. Where this is felt to be the case, the professional judgement method can provide an acceptable estimate with less effort than method two. Some attempt should be made in preliminary analysis (or simply from past experience) to isolate these programs and make use of a less formal estimate. Further structuring and refinements may be added as time and ability allow.

TAB EIGHT

PROFESSIONAL JUDGMENT DATA SHEET

Program	1977	1978	1979	1980	1981	1982

If no further changes or adjustments are to be made, these projections may be moved to Step Eight of the Procedures Summary.

II.B. METHOD TWO: MATHEMATICAL CALCULATION

Method Two projects the cost of consumables for each program based on the present cost for that or an equivalent program. A cost increase factor based on the cost increases of previous years is then applied to the current figure to obtain an estimate of future costs. Note that this is based on an average per training-station cost, multiplied by the number of training stations arrived at in previous TABS.

DEFINITIONS

1. *Training station* - the same figure as used in TAB SEVEN.
2. *Per-station estimated consumables cost* - As a category, "consumables" includes all expenditures for a program not included under instructional staff cost or capital expenditures. Typically, this will include paper, project construction supplies and any tools not counted under capital expenditures. This cost should be estimated for each training station (i.e. an average value for each station) As with capital expenditures, there may be some programs where it is difficult to allot costs by training station. In these cases a rough estimate is sufficient.
3. *Inflation Factor* - The inflation factor is calculated in exactly the same manner as in TABS SIX and SEVEN. The only difference is that the inflation rate used is that for consumables rather than instruction or capital cost. This does not need to be calculated separately for each program; a single estimate is sufficient.

DATA REQUIRED

1. NUMBER OF TRAINING STATIONS PER PROGRAM (FROM TAB SEVEN)
2. ESTIMATED PER-STATION CONSUMABLES COST FOR EACH PROGRAM.
3. AVERAGE ANNUAL CONSUMABLES COST INCREASE FOR EACH PROGRAM (INFLATION RATE).

PROCESSING STEPS

1. ENTER PROGRAMS IN COLUMN ONE. *(Data sheet next page)*
2. ENTER THE NUMBER OF TRAINING STATIONS (FROM TAB SEVEN) IN COLUMN TWO.
3. ENTER THE ESTIMATED PER-STATION CONSUMABLES COST FOR EACH PROGRAM IN COLUMN THREE.
4. MULTIPLY COLUMN TWO BY COLUMN THREE. PLACE THE RESULT IN COLUMN FOUR. *This is the total estimated consumables cost for each program.*
5. ENTER THE INFLATION FACTOR IN COLUMN FIVE.
6. MULTIPLY COLUMN FOUR BY COLUMN FIVE. PLACE THE RESULT IN COLUMN SIX. *This is the total projected consumables cost for each program.*

This completes method two. If no further changes or adjustments are to be made, these projections may be transferred to Step Eight of the Procedures Summary.

PLANNING YEAR

Col. 1 Program	Col. 2 Number of Training Stations	Col. 3 Estimated Per Station Consumables	Col. 4 Total Estimated Consumables	Col. 5 Inflation Factor	Col. 6 Total Projected Consumables Cost

III. COMBINING THE RESULTS OF THE METHODS

As with capital expenditures, one of the best ways to start the process is to use the Professional Judgement method for entering a number of quick estimates to get the feel of the type of calculations involved. This hopefully will also indicate those programs with very small consumable expenditures, and those for which expenditures are expected to remain very stable. It is quite possible that the initial estimates for these programs may be retained, with some savings in time and effort. This process should also highlight those programs which are difficult to estimate and will need considerable future research.

When both methods are being used and the results finalized, it is helpful to indicate all programs on each method's data sheet, then block out those programs which are not being entered via that method. This will help to avoid confusion and duplication of effort.

IV. HOW TO MODIFY AND EXPAND TAB EIGHT TO MEET LOCAL NEEDS

Further refinement of projections for consumables cost can be made by improving current estimates by program. This may require the introduction of some form of program cost analysis or program accounting system, if one is not already in effect.

If a general cost increase or inflation rate has been used, a more specific inflation rate for consumables might be calculated. This should be done at least once to see if the cost increase for program consumables differs from the general measures such as the Consumer Price Index. If it does, it may be worthwhile to continue estimating a separate rate. This may also be true of some single large programs which have a high consumables cost.

V. USEFUL SOURCES OF INFORMATION

Department Chairman

Building Bookkeeper

Products of the Long-Range Vocational Education Planning Projects

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Long-Range Vocational Education Planning Project: Final Report
Planning For Vocational Education
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